

We Claim:

1. A water treatment composition for maintaining a metal ion aqueous concentration at a bacteria controlling level comprising:

a metal ion yielding material selected from the group consisting of zinc sulfate,

5 zinc carbonate, zinc chloride, copper chloride, copper carbonate, copper sulfate, silver chloride, stannous chloride and stannic chloride;

a structure; and

a triple acting adhesive, said triple acting adhesive secured to at least one of said metal ion yielding materials, said triple acting adhesive further secured to said structure so that when said
10 structure is placed in a body of water the adhesive supports said metal ion yielding material in a condition whereby the adhesive remains secured to the structure and to the metal ion yielding material, with metal ions maintained in water at a concentration sufficient to kill bacteria therein.

2. The water treatment composition of claim 1 wherein the structure is active and comprises
15 particles of material.

3. The water treatment composition of claim 1 wherein the structure is an active structure selected from the group consisting of magnesium carbonate, magnesium silicate, calcium silicate, calcium oxide, silicon dioxide and calcium carbonate (limestone) or mixtures thereof.
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4. The water treatment composition of claim 1 wherein the structure is a strip of material with said strip of material secured to a filter cartridge.

5. The water treatment composition of claim 1 wherein the triple acting adhesive is selected from the group consisting of polyurethane, epoxy resin, polyvinyl alcohol, and polyvinyl acetate.
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6. The water treatment composition of claim 1 wherein the triple acting adhesive is polyvinyl alcohol.

7. The water treatment composition of claim 1 wherein the metal ion yielding material is silver chloride and the triple acting adhesive is polyvinyl acetate with an aqueous silver ion concentration maintained between 10 and 100 parts per billion (ppb).

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8. A method of applying a water treatment composition to an article comprising the steps of:

- a) applying an adhesive to a web of material;
- b) applying a metal ion yielding material in particle form to the adhesive on the web;
- c) allowing the adhesive to dry; and
- 10 d) forming the particle containing web into an article for use in water purification.

9. The method of claim 8 wherein the particle containing web is formed into a filter.

10. A method of making an article for insitu water treatment comprising the steps of:

15 selecting a water treatment material from the group consisting of zinc sulfate, zinc carbonate, zinc chloride, copper chloride, copper carbonate, copper sulfate, silver chloride, stannous chloride and stannic chloride;

selecting an adhesive from the group consisting of polyurethane, epoxy resin, polyvinyl acetate and polyvinyl alcohol;

20 selecting a water insoluble solid structure;

applying the adhesive to the water insoluble solid structure to form at least a partial coating thereon;

applying the water treatment material to the adhesive on said solid structure;

25 allowing the adhesive to set to thereby secure the water treatment material to the solid structure; and

forming the structure into an article for placement into a body of water to thereby enable the structure to adhesively support the water treatment material thereon in a condition that maintains a water concentration of metal ions less than 1000 parts per billion (ppb).

5 11. The method of claim 10 wherein the selected adhesive and selected water treatment material are combined in a slurry and simultaneously coated onto the structure using a die coater.

12. The method of claim 10 wherein the selected adhesive is sprayed on the solid structure and the selected water treatment material is applied to the adhesive on the structure.

10 13. The method of claim 10 wherein the selected adhesive is roll coated onto the structure and the selected water treatment material is applied to the roll coated adhesive on the structure.

14. The method of claim 10 wherein the selected adhesive is die coated onto the structure and the
15 selected water treatment material is applied to the die coated adhesive on the structure.

15. The method of claim 10 wherein the solid structure is immersed into the selected adhesive and the selected water treatment material is applied to the adhesive after the structure is removed from the adhesive.

20 16. The method of claim 10 wherein the selected adhesive applied to the solid structure is limited by a knife and the selected water treatment material is applied to the adhesive on the structure.

17. The method of claim 10 wherein the selected adhesive is roll coated onto the structure and
25 the selected water treatment material is roll coated on the adhesive on the structure.

18. A process of making a water treatment composition including the steps of:

a) mixing a first amount of silver nitrate into a first batch of water to form a silver nitrate mixture;

b) mixing a first amount of sodium chloride into the silver nitrate mixture to form a silver chloride mixture;

5 c) mixing an adhesive securable to both silver chloride and to support particles into a second batch of water to form an adhesive mixture;

d) combining the silver chloride mixture and the adhesive mixture to form an adhesive silver chloride mixture;

e) applying the adhesive silver chloride mixture to support particles; and

10 f) curing the adhesive silver chloride mixture insitu on the support particles to form support particles having a coating containing silver chloride.

19. The process of making a water treatment composition according to claim 18 wherein mixing an adhesive into a second batch of water includes mixing polyvinyl acetate adhesive into a
15 second batch of water.

20. The process of making a water treatment composition according to claim 18 wherein mixing an adhesive into a second batch of water includes mixing polyurethane adhesive into a second batch of water.

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